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# Official Report of Debates (Hansard)

Wednesday 16 November 2016

# Journal des débats (Hansard)

Mercredi 16 novembre 2016

## Standing Committee on Public Accounts

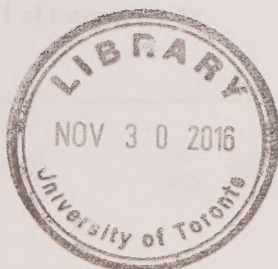
2015 Annual Report,  
Auditor General:

Ministry of Energy

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Rapport annuel 2015,  
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## LEGISLATIVE ASSEMBLY OF ONTARIO

## ASSEMBLÉE LÉGISLATIVE DE L'ONTARIO

STANDING COMMITTEE ON  
PUBLIC ACCOUNTSCOMITÉ PERMANENT DES  
COMPTES PUBLICS

Wednesday 16 November 2016

Mercredi 16 novembre 2016

*The committee met at 1233 in room 151.*2015 ANNUAL REPORT,  
AUDITOR GENERAL

## MINISTRY OF ENERGY

Consideration of section 3.05, electricity power system planning.

**The Chair (Mr. Ernie Hardeman):** Good afternoon and welcome to the Standing Committee on Public Accounts. We're here this afternoon to deal with section 3.05 of the 2015 Annual Report of the Auditor General. We have here a delegation from the Ministry of Energy and the Independent Electricity System Operator.

We want to first of all apologize for being late, but there's something about you don't want to rush your dinner or you get indigestion—or I should say lunch. But we do apologize for being late. We also want to extend a thank-you to you for coming again this afternoon to help us as we review that section of the report.

We'll start off this afternoon with the presentations. You'll have 20 minutes to make your presentations, and then we will have questions and comments from the committee, 20 minutes with each caucus, starting with the third party. Then, in the second round, we'll divide the time that's left, taking us to the end of the session evenly for the three parties and making a second circle.

With that, if we could also ask you, when you speak, that you introduce yourselves individually. The reason we do that is so that Hansard can get the name right, and secondly, I always have trouble pronouncing names that aren't Dutch. So, we thank you again, and if each of you, as you speak, would introduce yourselves, that would be very much appreciated. With that, we'll turn the floor over to you.

**Mr. Serge Imbrogno:** My name is Serge Imbrogno, and I'm the Deputy Minister of Energy. I'm joined here by, from the ministry, Michael Reid, assistant deputy minister of the strategic, network and agency policy division; Bruce Campbell, CEO of the IESO; and Mike Lyle, vice-president of planning, legal and indigenous relations and regulatory affairs with the IESO.

It's my pleasure to be here and to discuss the Auditor General's report on electricity and power system planning, and I look forward to our discussion over the next few hours.

We agree with the Auditor General that a clear planning process is critical for Ontario's electricity system. The AG's in-depth analysis has provided helpful insights on electricity planning in Ontario.

The ministry agreed with the AG's recommendations and committed to implement these recommendations through two pieces of legislation: the Energy Statute Law Amendment Act—Bill 135—and the Strengthening Consumer Protection and Electricity System Oversight Act.

In October 2015, the Minister of Energy introduced the Energy Statute Law Amendment Act, which would enshrine in legislation a long-term energy planning framework that is transparent, efficient and responsive to changing technology, policy and program needs.

The legislated LTEP process builds on the principles used by the ministry to develop the 2010 and 2013 LTEPs. The LTEPs identified the need for various investments over the shorter term while broadly mapping out the direction of the sector over a 20-year time frame.

The 2013 LTEP had a consultation and engagement process that allowed for transparency in the decisions being made by government in energy planning, including the costs associated with various planning scenarios, as well as a more robust consultation process than the former Integrated Power System Plan process.

This legislation specifies that energy planning takes a transparent and pragmatic approach and that future LTEPs are developed consistent with the following principles: cost-effectiveness; reliability; clean energy; community and indigenous engagement; and emphasis on conservation and demand management before building new generation.

The ministry is developing its next LTEP, which will follow the process outlined in the recent legislative changes to the Electricity Act, 1998. This legislation was passed by the Legislature, received royal assent in June 2016, and came into effect on July 1, 2016. The legislation amended the Electricity Act, 1998, and the Ontario Energy Board Act, 1998, to replace the former electricity planning process—the IPSP—with an LTEP process.

The legislation outlines the following process for developing the next LTEP:

The Minister of Energy requests the IESO to prepare a technical report on the adequacy and reliability of electricity resources with respect to anticipated electricity



supply, capacity, storage, reliability, demand, and other matters identified by the minister.

The IESO's technical report is the starting-point information that helps to inform the consultation process. This document has been made available to the public to inform the consultation process.

The first technical report was released by the IESO on September 1, 2016. The report, entitled the Ontario Planning Outlook, is a 10-year review and a 20-year outlook to 2035 for electricity demand, supply, system costs, conservation and emissions. As requested by the minister, the Ontario Planning Outlook considers other government commitments, including the climate change action plan.

Alongside the OPO, the IESO posted seven modules with underlying data and assumptions.

Beyond the legislative requirements, the ministry also released a technical report on the fuels sector. This report was completed by Navigant Consulting, with advice from a fuels sector working group. While the fuels sector technical report is not a requirement of the legislative process, it is complementary to the IESO's OPO and provides stakeholders with a comprehensive view of the energy sector.

The next step in the LTEP planning process is for the ministry to conduct comprehensive consultation and engagement. Developing the LTEP is a highly collaborative process. The ministry works closely with its agencies, indigenous communities and stakeholders during LTEP consultations and development.

As I mentioned earlier, the consultation and engagement process outlined in the Energy Statute Law Amendment Act builds off the 2013 LTEP process, which was the most comprehensive consultation and engagement process ever undertaken by the Ministry of Energy. For example, it included:

- 13 public open houses in 12 different communities;
- 10 engagement sessions with First Nations and Métis communities;
- over 1,000 submissions via the Environmental Registry and directly; and
- nearly 8,000 responses to an online questionnaire.

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The next LTEP will expand on the lessons learned in the 2013 LTEP by increasing the number of in-person engagement sessions and the use of online and other consultation tools. Consultations for the next LTEP are currently well under way, including 17 sessions across Ontario, as well as more than 16 First Nation and Métis engagement sessions across the province and an extensive suite of online tools. Michael Reid, the assistant deputy minister, will discuss our commitment to indigenous engagement shortly.

In support of open government, the ministry has engaged with relevant distributors, consumers, generators, transmitters, indigenous communities and other stakeholders. The ministry has met its requirements to promote the participation of the public, indigenous communities and stakeholders in the engagement process.

Ontarians also have the opportunity to have their say about the LTEP online. This includes providing a formal submission through the Environmental Registry website or completing an online survey, which includes an open comment section.

I'll just move a little bit ahead because I know that Michael and Bruce want to say a few words as well.

Following the LTEP consultations, the Ministry of Energy will develop the long-term energy plan, taking into account feedback obtained during the LTEP engagement and consultation process. The LTEP and other information used in the development of the LTEP will be posted on a government of Ontario website, supporting the open data initiative. The LTEP will be approved by cabinet.

To ensure that the government's goals and expectations outlined in the LTEP are implemented, the proposed legislation includes authority for directives approved by cabinet to be sent to the IESO and the OEB, setting out the government's requirements for implementation and directing each agency to develop respective implementation plans. Upon receiving an implementation directive, the two agencies would develop respective plans outlining frameworks on how best to implement the government's objectives and requirements. Once these implementation plans have been approved by the minister, the IESO and OEB will move forward with their implementation plans.

To conclude my remarks, we agree with the Auditor General that a clear planning process is critical for Ontario's electricity system, and we are confident the LTEP process achieves this.

Now I will turn it over to Michael Reid, just to give you a bit of insight into our indigenous engagement as it relates to LTEP.

**Mr. Michael Reid:** Hi. I'm Michael Reid, an assistant deputy minister of strategic, network and agency policy at the Ministry of Energy. Good afternoon to the committee, and thank you, Deputy.

I am happy to speak about the indigenous engagement sessions that the Ministry of Energy is holding across the province as we update the next long-term energy plan. As the deputy mentioned, a robust indigenous engagement process was undertaken for the development of the 2013 long-term energy plan. For the next LTEP, we've developed what we think is an even more robust and comprehensive indigenous process.

This process is under way. We did start in October and will extend into mid-December the engagement sessions with indigenous communities. We are going to hold a minimum of 16 sessions hosted in various First Nation and Métis communities. One of the things that we've done is we've placed a particular focus on regional sessions to ensure that communities across the province have the opportunity to attend an in-person meeting. Ministry staff, including myself, as well as staff from the IESO, have been travelling to these sessions across all regions of Ontario, and that has included remote, off-grid First Nations. For example, we were in Fort Severn about



a week ago, which is up on the Hudson Bay coast. We've also held sessions in other communities, such as Nigigoonsiminikaaning, which is near Fort Frances.

The sessions are usually held within the local communities at, for example, youth centres or bingo halls or local community centres. In addition to directly engaging communities and having them come to one of these sessions, we've also engaged with political territorial organizations, as well as the Chiefs of Ontario, again to make sure that all communities are aware of the processes under way and the meetings that make the most sense for them to attend.

It's our goal in the development of this next long-term energy plan to ensure that representatives from every indigenous community in the province have the opportunity to participate and speak with us directly. That also includes the development of indigenous-specific materials, such as a workbook that we take to the sessions that helps facilitate some of the dialogue and engage with communities about the interests and issues that are of most importance to them.

As the deputy mentioned as well, we've also established a number of ways that communities can provide feedback into the LTEP process in addition to the in-person meetings—through the Environmental Registry. There's also an online tool on the ministry website called EnergyTalks. There's also a dedicated email address, [indigenous.energy@ontario.ca](mailto:indigenous.energy@ontario.ca), to provide feedback.

We're very proud of the work we've undertaken to date to ensure a very comprehensive and inclusive LTEP process, and we do look forward to receiving continued input from indigenous communities to strengthen Ontario's long-term energy planning process.

It's over to you, Bruce.

**Mr. Bruce Campbell:** Thank you to the committee for the opportunity to appear today. With me is—well, I forgot to do the first thing you asked me to do, which was say my name, which is Bruce Campbell, president and CEO of the IESO. With me today is Mike Lyle, vice-president, planning, legal, indigenous relations and regulatory affairs. To my immediate right and hiding behind Mike is Terry Young, who is our vice-president, conservation and corporate relations.

I'll speak today to the IESO's role in the new planning process, the findings of the Ontario Planning Outlook report that Serge, the deputy, has mentioned and our regional planning process.

In September, the IESO submitted the Ontario Planning Outlook, or OPO, to the minister. It provides both a 10-year review, 2005 to 2015, and a 20-year outlook, 2016 to 2035, for Ontario's electricity system.

The OPO provides context for the planning discussions under way in the government's long-term energy plan engagement process. The report can be found on our website, along with a series of modules that provide a detailed breakdown of the assumptions, facts and figures underpinning the report.

As we've heard from the deputy minister, the government is conducting engagement sessions across the prov-

ince to obtain feedback for the next long-term energy plan. The IESO is supporting these efforts by presenting the findings of the OPO to help facilitate well-informed discussion.

We've had good feedback on the report, and I'd really like to acknowledge the work that Mike and his team did to put this together.

Looking first at the past 10 years, Ontario's electricity sector has gone through significant change with the elimination of coal from our system and adding renewables to our supply mix. Through the investment in new and refurbished generation assets, we've addressed the reliability concerns of a decade ago, implemented a cleaner supply to meet Ontario's needs, and expanded demand-side resources.

The change in supply mix brought with it a number of challenges, particularly in managing the variable nature of our renewable resources. But working with the sector, we addressed those operational issues and, together, we've set a North American example for renewables integration.

And while the past decade will be remembered as one of significant change, I expect that the changes we've seen will be eclipsed by what we see over the next 20 years.

In that regard, Mike's team looked out over the coming 20 years and put together a clear and concise picture of the different factors that could impact supply and demand over that period—no easy task.

The Ontario Planning Outlook concludes that Ontario is well positioned to meet provincial needs into the next decade while continuing to adapt to the changes occurring across the sector.

In developing the outlook, we considered a range of demand scenarios that could evolve for Ontario's future electricity system. Uncertainty is inherent in any future scenario, particularly ones that extend 20 years into the future, where there's increased uncertainty about how people will consume electricity and how the economy will develop and adjust to climate change policies.

As I noted earlier, we see accelerating change over the decades ahead. For the IESO, one of the most critical priorities will be to ensure continued reliability, given the large number of moving parts. These include:

- the continued expansion of renewables;
- nuclear refurbishments at Darlington and Bruce;
- growing consumer engagement and behavioural changes;
- continued growth of embedded resources;
- the variability we see in daily operations; and
- the evolution of technology and innovation.

This changing landscape provides important context for the planning work we do and the new planning process the government has put in place.

Looking ahead, Ontario's nuclear fleet will continue to provide a vital role in the province's energy mix. In 2015, nuclear power accounted for about 60% of the electricity generated in the province and is expected to continue to provide the majority of the supply over the longer term.



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The role of renewable energy sources will continue to grow. By 2025, renewables such as wind, solar, bio-energy and hydro facilities are expected to approach half of Ontario's installed generating capacity. Much of the growth in renewable energy will be connected to the distribution system, and distributed energy resources are also being promoted by some communities in the context of ongoing regional planning activities across the province.

New and evolving technologies are expanding opportunities for customer choice and participation in Ontario's electricity system. We're seeing a transition toward a system that's really characterized by two-way flows of both energy and information, as well as more and more distributed energy resources.

I'll give you one example: We've partnered with PowerStream, a local distribution company just to the north of Toronto, to study how we can enhance reliability and efficiency through coordination of resources now controlled separately by the IESO and by the local distribution companies. And we're funding there an exciting new pilot project, PowerStream's PowerHouse project, where 20 homes have been equipped with solar plus storage systems that will be collectively managed by the local utility. These systems will respond to electricity prices, turning to both solar and storage to reduce consumption from the system.

This is starting out with incorporating 20 houses and in effect operating them together, but if that were expanded, as PowerStream would certainly like to do—I just picked a number; if you extended it to 30,000 houses, which is only a small portion of PowerStream's total—that would amount to a controllable load of about 140 megawatts that we could treat just the same way we treat a generating unit. So it's a really interesting example of what technology is offering us going forward and why there's so much to talk about in the consultations that we're having. That's just one example of how consumers are participating in the electricity system in really some brand new ways.

We're making terrific progress, I think, in establishing a culture of conservation, while demand management and load displacement are proving to be cost-effective resources that are being leveraged in a variety of ways to benefit individuals, industries and the province as a whole. Building on Ontario's smart meter infrastructure, data-driven apps and solutions are already delivering new insights into consumption patterns and supporting better decision-making about how and when to use electricity.

At the same time, micro-grids are being developed in Ontario for their ability to increase local resilience and support added reliability, for example to avoid outages from storm damage. They also offer increased ability to connect and manage variable local resources.

The point I want to convey is that to plan for the future, with all of the change we're seeing, it's a real benefit to have a planning process in place, like the LTEP consultations, that invites discussion and suggestions

from a broad range of stakeholders. The long-term energy plan will also provide a context for regional planning activities across the province. A key goal in our regional planning work is to integrate energy planning seamlessly into local planning, giving communities a greater say in defining and executing their energy solutions.

As with the LTEP, engagement is a vital component for this process, involving transmitters, local distribution companies and the IESO working collaboratively with municipalities, First Nations and Métis, associations and stakeholders to share their priorities and preferences for the growth of their communities.

Overall, I believe the extensive electricity and energy planning process that is now being put in place and evolving will continue to serve the province well.

**The Chair (Mr. Ernie Hardeman):** Thank you very much for your presentation. We will begin the questions and comments with Mr. Tabuns from the third party.

**Mr. Peter Tabuns:** Thank you, Mr. Campbell and Mr. Imbrogno. I want to start with the IESO. Mr. Campbell, I understand that you can provide a table showing the cost of the global adjustment over the period 2006 to 2014 for all those elements in the system that are financed by the global adjustment. I had an opportunity to talk to the auditor earlier, and I gather such a table exists.

**Mr. Bruce Campbell:** I think we have a table along those lines that we had provided to the Auditor General's staff. I'll confirm that and, if that's the case, we will provide that.

**Mr. Peter Tabuns:** Yes, if you'll confirm and, assuming it exists, if you'll provide it to all of us, I think we would be very appreciative.

Another small point: The Ontario regulated price plan report, October 19, 2016, shows gas prices at 17.3 cents per kilowatt hour. Is that consistent with your knowledge of the price of gas in the system at this point?

**Mr. Bruce Campbell:** I'm sorry. What was the reference?

**Mr. Peter Tabuns:** The Ontario regulated price plan report, October 19, 2016, shows gas at 17.3 cents a kilowatt hour. Is that consistent with your knowledge?

**Mr. Bruce Campbell:** I don't think I can confirm that just right off the top of my head.

**Mr. Peter Tabuns:** Could you check and get back to us?

**Mr. Bruce Campbell:** Yes, I can do that.

**Mr. Peter Tabuns:** Thank you very much. I appreciate that.

First question then, just in terms of planning: The Darlington Refurbishment Business Case Summary noted that levelized unit energy cost or electricity cost of power from Darlington was to be 7.9 cents per kilowatt hour. Ontario Power Generation is asking for a steady increase at 11% per year at the OEB, taking the price up to 16 cents a kilowatt hour. Which price did you use in your projection of cost for the system: the 7.9 cents or the 16 cents?



**Mr. Michael Lyle:** When we did our Ontario Planning Outlook, we used the evidence from Ontario Power Generation to inform our cost analysis. Our cost analysis indicates that, looking at the system costs overall, you see that those costs stabilize in the next several years and, over the planning period, start to turn down, when you look at real dollars of the total system cost.

**Mr. Peter Tabuns:** So are we talking 7.9 cents a kilowatt hour or 16 cents a kilowatt hour?

**Mr. Michael Lyle:** I would have to confirm the exact number that we used.

**Mr. Peter Tabuns:** Could I ask you to do that and provide that to the committee?

**Mr. Serge Imbrogno:** Could I maybe clarify a bit? I think we had this exchange at estimates.

**Mr. Peter Tabuns:** We did, and I'm following on, Mr. Imbrogno.

**Mr. Serge Imbrogno:** Maybe I should have been more precise. Over the period when OPG is doing its refurbishment, you'll have—I think I've explained that there will be outages. You won't have that production, so the per-unit cost will be higher during that refurbishment period.

The cost of power that we're talking about: Once all of the refurbishment is done over that 10-year time frame, when all of the units are back in production, you get closer to that range of between seven and eight cents. Post-refurbishment, you have that price that's quoted. Then during the refurbishment period, you have these accelerating rates, because you have fixed costs over less production. That's where you get that 11%, over that period. Those are the two time frames that you have to think about.

**Mr. Peter Tabuns:** So you're saying that by the time we are at the 10-year point, the price of power from the Darlington complex will be 16 cents a kilowatt hour—

**Mr. Serge Imbrogno:** No.

**Mr. Peter Tabuns:** —and it will drop thereafter?

**Mr. Serge Imbrogno:** Well, it will have that escalation, assuming the OEB agrees. Then, once all of the units are back after that 10-year period, that's the 30-year price. Once the refurbished units are back in power, it gives you the 7.9 cents.

**Mr. Peter Tabuns:** Could we see those calculations showing those numbers? Could you provide them to this committee?

**Mr. Serge Imbrogno:** We are providing you with a more precise answer based on the estimates, so that will be coming. It will have more of the detail that I think you're looking for.

**Mr. Peter Tabuns:** It will show the detail over the next decade and the detail in, let's say, the five years following the end of that—

**Mr. Serge Imbrogno:** It will refer to, I think, what is in the OPG submission to the OEB and pull that information out so it's more precise. But we will provide that for you as part of our response to estimates.

**Mr. Peter Tabuns:** I look forward to that data, and I would also like to know more concretely what numbers

were actually used in the projections you used for the cost of electricity: whether you used the 7.9 cents or the escalating figure. I look forward to getting those numbers.

On the question of conservation, and this is something I asked the deputy about: Since you do the calculations and the projections, how do you assess the value of conservation? Do you use conservation in assessing the value of one option against another? For instance, if there is a proposal to put forward a new gas-fired power plant, will you assess the alternative—investing in conservation—and see if that's a better business case than investing in the gas-fired power plant?

**1300**

**Mr. Michael Lyle:** We're looking at conservation from an overall system perspective. As I think you're aware, conceptually with conservation, you have the potential that can be achieved through conservation, and then there's the economic potential. But then beyond that, you also have to consider what is actually achievable potential, because there's not going to be 100% take-up of all economic potential conservation.

What we recently completed was an achievable potential study, undertaken by an independent consultant, that indicates—

**Mr. Peter Tabuns:** That's the Nexant study?

**Mr. Michael Lyle:** That's correct.

**Mr. Peter Tabuns:** Okay.

**Mr. Michael Lyle:** That indicated to us that the 30-terawatt-hour target in the LTEP 2013—by 2032, while it remains a challenging number, it is achievable. It's built into all of our projections in the OPO, that we are working towards achieving that 30-terawatt-hour target.

**Mr. Peter Tabuns:** So you look at conservation and its impact on the system as a whole, but if I'm understanding you correctly, when a proposal is made for an investment in an area, you don't compare the potential cost from a conservation program with that generation cost—

**Mr. Michael Lyle:** The point is, we've already factored that in before we've come to the conclusion that a supply resource is needed, because we've considered that there is going to be achievement of that target, and the economics of that is in part based on the avoided costs. The avoided costs are generation options.

When we do that achievable potential study, we're considering and we're looking at the economic potential. We're looking at the avoided costs of having to build a generation resource. That's already built into the broader macro-level analysis of how much conservation is achievable for the system.

**Mr. Peter Tabuns:** So you—

**Mr. Serge Imbrogno:** If I could just prompt Michael a bit—

**Mr. Peter Tabuns:** Go ahead, Mr. Imbrogno.

**Mr. Serge Imbrogno:** There's the bulk system planning, and we've talked about having the demand reduced by conservation. The IESO also engages in regional planning. I think when you do regional planning,



you also look at what is the opportunity for demand response, for example. I believe IESO builds that in when they're looking at whether you upgrade a transformer, whether you build new generation, or whether you have demand response or other initiatives.

There is bulk system planning, and then there's regional planning that looks at individual opportunities to solve a problem, which could include types of conservation.

Maybe you could expand, Michael. Hopefully, I've got that correct.

**Mr. Peter Tabuns:** Are there situations in which you've assessed the cost-benefit of going to conservation rather than investing in transmission and decided that it was better to invest in conservation?

**Mr. Michael Lyle:** We are currently involved in a pilot project in the Brant county area, looking to bring on some DR. We're going to have a pilot auction to seek to procure DR in order to be able to defer some investments in our transmission system.

**Mr. Peter Tabuns:** So you haven't done that in the past. This is a pilot project, and this is a new approach—

**Mr. Michael Lyle:** We're in the beginning stages of regional planning. It's very challenging to the economics of where we are in our system today, where we don't have significant new needs to either defer demand by additional conservation or to meet new demand through building generation. It means that generally, we find that a transmission resource is the most economic approach. As we look out over the longer term, that may change. As we start to see, potentially, needs for new resources to come on stream, that may change.

**Mr. Peter Tabuns:** Okay. On another matter, did the IESO recommend the Darlington refurbishment?

**Mr. Michael Lyle:** The IESO in general has recommended that there is value in moving forward with the refurbishment.

**Mr. Peter Tabuns:** So you did an analysis and you concluded this was a correct policy direction?

**Mr. Michael Lyle:** The analysis that I'm aware of focused more on the Bruce facility. There would have been analysis going back to the former—the OPA's LTEP 2013 on nuclear refurbishment that Serge might be able to speak to in more detail than I would.

**Mr. Serge Imbrogno:** I think in the 2013 LTEP we had the refurbishment of both Bruce and Darlington sites as part of the planning discussions. We had different dates of refurbishment—

**Mr. Peter Tabuns:** I know that you did, Deputy Minister. I'm curious as to whether or not the IESO and the OPA actually did an analysis.

**Mr. Serge Imbrogno:** When I say “we”—we worked closely with the IESO on the development process of the LTEP. The IESO would have done all the modelling. They would have been at all the discussions where we talked about what the role of nuclear is going forward, in terms of its cost, in terms of its benefit to the system, in terms of the baseload run. All those factors would have been taken into account as we built the plan, which

included a number of elements, including refurbishment and renewables and so on. So I think it was all part of the system plan at the time.

**Mr. Peter Tabuns:** Okay. I'll go back then: Did the IESO recommend the life extension for the Pickering plant?

**Mr. Michael Lyle:** Yes, we did.

**Mr. Peter Tabuns:** You did. Can you provide us your analysis of that proposal?

**Mr. Michael Lyle:** There's some of that analysis that is on the public record, and we can provide that to you.

**Mr. Peter Tabuns:** Thank you.

**Mr. Serge Imbrogno:** Just for the record, I think I provided that to you. It's the \$600-million analysis that was provided in the OPG's rate hearing at the OEB. They can provide you with the same thing, but I think you've already received it.

**Mr. Peter Tabuns:** What you've talked about before is the IESO's document, is that correct?

**Mr. Serge Imbrogno:** Yes. That's what OPG provided to the OEB as evidence that there was a business case.

**Mr. Peter Tabuns:** I'll ask for it again for this committee. That would be great, thank you.

In shutting down the large renewable procurement II, the Minister of Energy said people would save \$2.45 a month. Do you know what year that saving would be effective?

**Mr. Michael Lyle:** I don't have that information available at my fingertips.

**Mr. Peter Tabuns:** Can we ask you to bring that information to the committee?

**Mr. Michael Lyle:** Yes.

**Mr. Peter Tabuns:** Thank you.

Can you tell us what percentage of the global adjustment goes to the non-utility generators, the NUGs?

**Mr. Serge Imbrogno:** Those numbers are available, we just don't have them off the top of our heads.

**Mr. Peter Tabuns:** Well, then, if they're available, I'd like to have them.

**Mr. Serge Imbrogno:** I think that chart that you're going to get from the IESO would probably have that breakdown.

**Mr. Peter Tabuns:** Okay. I'll dispense with that for the moment, and I'll go to you, Mr. Deputy Minister. Thank you very much.

The report the Auditor General has made seems to find that there is not the transparency and the public input into decision-making that's needed. I'm not going to put words in her mouth, but she has suggested that the future power generation decisions involve cost-benefit analyses assessing the potential impact of decisions on electricity consumers and the power system. You agree with those recommendations.

Can you tell us, given that we're looking at a very big bump-up in the rates from Darlington—what is it, about 6.9 cents or 6.5 cents per kilowatt hour now going up to 16? Did you look at the impact that would have on the consumers in this province?



**Mr. Serge Imbrogno:** Well, we would have, as part of our 2013 LTEP consultation process, had full stakeholder sessions where the future of nuclear was discussed. I think what we've done on Darlington is now before the OEB, so we'll see where the OEB lands on it in terms of the OPG ask. There is the rate smoothing that we tried to put in place to address the peaks and valleys that are happening over that refurbishment period. But we do think, in the long term, given our climate change imperative, that the contribution of nuclear to the overall fleet is a positive contribution. We had those open consultations. We received input from a number of stakeholders. Then, when we did the planning process, we did build it in.

**Mr. Peter Tabuns:** Can you tell us where in that current long-term energy plan the cost of the power is noted? Because if someone had said at that point that we were looking at power in the 15-to-16-cents-a-kilowatt-hour range, I think you might have had a different response.

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**Mr. Serge Imbrogno:** I think there are a couple of things in the 2013 LTEP. There are charts that show the cumulative impact on residential and industrial, and I think we're very transparent on that.

**Mr. Peter Tabuns:** And that used the 16-cents-a-kilowatt-hour number?

**Mr. Serge Imbrogno:** That would have been embedded. The assumptions at the time would have been embedded, on what is the forecast for Darlington and Bruce. You'll recall—

**Mr. Peter Tabuns:** And what did you assume at the time?

**Mr. Serge Imbrogno:** Well, you'll recall that there were different schedules in terms of refurbishment, so that would have been built in. But the overall costs would have been similar to what it is now. There are also very detailed LTEP modules that give a more precise breakout of the different cost assumptions that went into the—

**Mr. Peter Tabuns:** Can we have that LTEP module?

**Mr. Serge Imbrogno:** Absolutely. They're all on the public website. We can make you copies.

**Mr. Peter Tabuns:** That would be great.

**Mr. Serge Imbrogno:** But that was the intent, to provide the public with all the information that went into the summary charts that are in the LTEP. There are seven modules; I think one of the modules is a costing module that breaks it down and provides more detail on the assumptions.

**Mr. Peter Tabuns:** Yes, if you could provide us with that, that would be very useful.

The real cost of the refurbishment: It looks like there's going to have to be several billion dollars charged to customers to deal with the fluctuations in income for OPG. If \$12.8 billion was the cost of refurbishment and now we have these additional costs to deal with—volatility and OPG's need for revenue—what's the real cost of the project?

**Mr. Serge Imbrogno:** The cost of the refurbishment is the \$12.8 billion.

**Mr. Peter Tabuns:** And that includes the—

**Mr. Serge Imbrogno:** That's recovered in different phases. That's based on 2015 dollars, so that is the all-in cost. It includes all of those costs that you're talking about, because—

**Mr. Peter Tabuns:** It includes the rate-smoothing cost?

**Mr. Serge Imbrogno:** I believe—I can confirm that, but that is part of the—

**Mr. Peter Tabuns:** Could you please confirm that? I would appreciate that. That's a very sharp increase, an extra \$2 billion. I had no idea that it was embedded in the \$12.8 billion in the past.

**Mr. Serge Imbrogno:** I will check on the rate smoothing and how that's incorporated.

**Mr. Peter Tabuns:** I have the OEB document here. I don't see it incorporated in the \$12.8 billion, but if you can give me the numbers showing exactly where that money is coming from and how it has previously been accounted for, that would be useful.

Does the Bruce refurbishment have a similar rate-smoothing mechanism? Because if we're talking about the OPG having to deal with lost revenue because reactors are shut down, surely Bruce will run into the same problems. Are we looking at an 11% per year increase in the cost of Bruce Power?

**Mr. Bruce Campbell:** The way the Bruce agreement works, the capital costs of doing all of that work are financed by Bruce Power and collected back through the prices that are anticipated for that project as through the electricity production. If I recall correctly, the number around there was about—

*Interjection.*

**Mr. Bruce Campbell:** I think about six and a half cents. The structure of that arrangement is that they will finance all of that themselves.

**Mr. Peter Tabuns:** That's a very big difference between the two.

**Mr. Bruce Campbell:** The two deals, the two arrangements, have different structures, yes.

**Mr. Peter Tabuns:** Okay.

**The Chair (Mr. Ernie Hardeman):** Just a very short question.

**Mr. Peter Tabuns:** Can you provide us with the business case for the extension of Pickering? In the last LTEP, it was said it would be shut down by 2020, and in fact there was consideration of shutting it down earlier. What's the business case?

**Mr. Serge Imbrogno:** I think we've committed to getting that to you, Mr. Tabuns. I think that's the \$600-million net benefit to the system that the IESO did in their analysis. I would just add to that that's just looking at system benefit; it doesn't include the eight megatonnes of GHG savings that we would get from not running the gas fleet during that period. It's just a system benefit.

**Mr. Peter Tabuns:** And does it address the impact on surplus baseload?

**The Chair (Mr. Ernie Hardeman):** We'll have to end it there, and then we'll go to the government side. Mr. Delaney?



**Mr. Bob Delaney:** Thank you very much, Chair. Good afternoon, everybody. Just before we proceed, were there any other comments that you just wanted to add with the item under discussion?

**Mr. Serge Imbrogno:** On the Pickering extension, save for the analysis, there's a \$600-million net benefit, and that's just the system benefit. We've also looked at what the GHG benefits are of having that Pickering life extended. With the Pickering life extension, during the refurbishment period, we would have likely had to run our gas plants more. With Pickering being there, we are able to not run the gas plants and run Pickering instead. There are other benefits to OPG in terms of the workforce. There's thousands of jobs that can be maintained at Pickering and there's an easier transition once the Darlington units are refurbished, so there are benefits for our workforce retention and engagement over at Darlington. There are a number of other benefits that aren't quantified in that \$600 million.

**Mr. Bob Delaney:** And of course, also the value of the enormous tonnage of carbon dioxide that is not generated from what would otherwise come from burning natural gas.

Could you talk a little bit more about some of the rationale behind the province's decision on proceeding with nuclear refurbishment? I do know, in visiting some of our counterparts in the northeastern states, that our very comprehensive plan of nuclear refurbishment is one that they look at with open-mouthed awe and say, "Oh, my God, I wish we could do something like that." Could you talk, then, a little bit about the refurbishment and possibly some of the role that our Candu reactors are playing in assisting Ontario to meet its climate change targets?

**Mr. Serge Imbrogno:** I can start. I'll probably ask my ADM, Steen Hume, to come up; he's the ADM of the electricity supply policy division and he can provide a few more details. But I think we're all aware that Ontario has been safely operating nuclear power plants for the last 40 years, starting with the launch of Canada's first full-scale nuclear reactor at Douglas Point back in 1968. We currently have 18 operational reactors in Ontario, spread across three sites at Darlington, Pickering and Bruce, for a combined capacity of about 13,000 megawatts. Another two units at Pickering have been shut down and are undergoing decommissioning.

Our fleet was designed to provide electricity for approximately 25 to 30 years. Refurbishment and replacement of key reactor and station components is necessary to allow for continued operation for approximately 30 additional years. Nuclear refurbishment received strong province-wide support during the 2013 long-term energy plan consultation process. The merits of proceeding with nuclear refurbishments, we believe, are clear. Refurbished nuclear is expected to be the most cost-effective and emission-free generation available to Ontario for meeting its round-the-clock power requirements. Existing nuclear generating stations are located in supportive communities and currently have access to high-voltage transmission.

The refurbishments of Bruce and Darlington will support Ontario's globally recognized nuclear supply chain, with more than 180 companies and a highly skilled workforce of approximately 60,000 people in plant operation and other support.

I'm going to ask Steen Hume to give you a bit more detail on the benefits of refurbishing our nuclear fleet.

**Mr. Steen Hume:** Thank you. My name is Steen Hume. I'm the assistant deputy minister of energy supply policy in the Ministry of Energy. Just to step back a bit, Ontario is committed to refurbishing its nuclear fleet. We see it as an important foundation for Ontario's nuclear supply, to export their products, services etc., so it's an important economic benefit.

With respect to the refurbishments, on December 3, 2015, the government announced that Ontario had updated its contract with Bruce Power and was proceeding with the refurbishment of six nuclear units at the Bruce Power nuclear generating site in Kincardine. This will begin in 2020. Then on January 11, 2016, the government announced its decision to proceed with Ontario Power Generation's refurbishment for nuclear units at the Darlington site, securing around 3,500 megawatts of power. The refurbishment of the first unit or, as we call it, unit 2, at Darlington has recently commenced, as of October 15, 2016. One unit was taken off-line so that Ontario Power Generation could begin to remove and replace and repair critical components of the reactor.

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Together with the two Bruce units and the refurbishment in 2012, these refurbishments will secure over 9,800 megawatts of affordable, reliable and GHG-free baseload generation capacity and support GHG reduction targets set by Ontario's climate change action plan. So, to the committee member's point, there are significant GHG benefits to refurbishment.

With respect to the updated Bruce agreement announced in December 2015, this agreement secures 6,300 megawatts of emissions-free baseload generating capacity from the Bruce site over a long period. The updated Bruce agreement achieves \$1.7 billion in savings for electricity consumers when compared to the forecast in the 2013 long-term energy plan. This means a reduction in forecast household electricity bills by about \$66 each year over the next decade.

Under the new agreement, Bruce Power is expected to invest approximately \$13 billion of its own funds and will take full risk of cost overruns on refurbishment of the six nuclear units. This is a significant enhancement to the updated agreement and of benefit to the province. In addition, the Bruce Power site is estimated to maintain 18,000 direct and indirect jobs annually, with \$14 billion in annual Ontario economic benefits, through the spending on operational equipment, supplies, materials and labour income—again, a significant economic benefit opportunity for the province.

During the Bruce Power refurbishment, the Bruce site will provide an additional estimate of 5,000 direct and indirect jobs annually, with \$2.3 billion in annual economic benefits.



For the Darlington refurbishment, Ontario Power Generation budgeted the project. The project budget is \$12.8 billion, about \$1.2 billion less than the original projection by OPG, and all four units are scheduled to be completed by 2026.

It should be pointed out that refurbishment of the nuclear units at Darlington is critical for Ontario's energy future. Darlington refurbishment will boost economic activity across Ontario, creating jobs and also securing 35 megawatts of affordable, reliable and emissions-free power.

Refurbishment and continuing operation at Darlington up to 2055 will contribute a total of \$90 billion to Ontario's GDP and increase employment across the province by an average of 14,200 jobs annually. This investment will also preserve about 3,000 jobs at Darlington as it provides 30-plus years of cost-effective, clean, reliable and, again, emissions-free baseload generation capacity.

The average cost of power from Darlington nuclear unit post-refurbishment is estimated to range between \$72 per megawatt hour and \$81 per megawatt hour, or seven or eight cents per kilowatt hour. The starting price of the Bruce Power output under the updated refurbishment agreement contract is \$65.73 per megawatt hour and is estimated to be \$77 per megawatt hour over the life of the agreement contract.

Both Darlington and Bruce prices are within the range assumed in the 2013 long-term energy plan for refurbishing nuclear energy and lower than the average price of electricity generation in Ontario, which in 2015 was \$92 per megawatt hour.

With respect to the Pickering nuclear facility, it will not be refurbished, as we've mentioned in the past, but we are looking at extending the operation of services at the facility. We've approved OPG's ability to do work on seeking the necessary regulatory approvals from the Ontario Energy Board and the Canadian Nuclear Safety Commission to enable the ongoing operation of the Pickering facility out to 2024.

At this point, all Pickering units will be shut down and decommissioned once we conclude at 2024. Operating Pickering up to 2024 will ensure that the province has a reliable, affordable and, again, emissions-free source of power during the Darlington and initial Bruce refurbishments.

In closing, Ontario has been safely operating nuclear facilities for over 40 years, as the deputy mentioned. The current fleet of operational units at Darlington, Pickering and Bruce provide a combined capacity of about 13,000 megawatts of power.

Ontario's nuclear reactors are designed to provide electricity generation for approximately 25 to 30 years. Refurbishment and replacement of key components will allow for continued operation for approximately 30 additional years.

Refurbishing nuclear is expected to be the most cost-effective and emissions-free generation available to Ontario for meeting its around-the-clock power requirements. In addition, the refurbishment of Bruce and

Darlington will support, again, a globally recognized nuclear supply chain, which supports over 180 companies, and a highly skilled workforce of approximately 60,000 people in plant operations, support, nuclear refurbishment and the manufacturing supply chain.

Finally, Ontario's commitment to refurbishing its nuclear fleet will also create a strong foundation for Ontario's nuclear suppliers to export their products and services to the global nuclear industry. There is a future in a number of other jurisdictions who are also on the journey of refurbishment. Refurbishing Ontario's reactors provides an export opportunity for expertise in other places.

**The Chair (Mr. Ernie Hardeman):** If I could just caution the member that we do want the questions and comments to relate to the auditor's report as opposed to the whole nuclear industry. I think for the benefit of everyone on the committee, as we're gathering information from this hearing—

**Mr. Bob Delaney:** I thank the Chair for the question, which I grasp. I was hoping that the assistant deputy would provide the background—the foundation, if you wish—for precisely that, which I'm going to pick up on now, which is to talk about the long-term energy plan slated for 2027.

This time, for the first time, there is a Fuels Technical Report, which I think is going to be a topic that we learned from doing the 2013 long-term energy plan and that came out as a very good idea to do. In line with the comment made by the Chair, perhaps the panel could explain to this committee the role of the Fuels Technical Report in the long-term energy plan process.

**Mr. Serge Imbrogno:** Thank you for that question. I'll start and then I'll let Steen take over. Steen actually led the fuels sector working group and was integral in drafting the report.

I think I mentioned in my opening remarks that in the 2013 LTEP there was a major focus on electricity. We also talked about the fuels sector and we talked about principles for expanding pipelines in Ontario. So we did address some of the fuels, but it wasn't to the extent that we're going to do in the next long-term energy plan.

In order to assist us in crafting the next long-term energy plan, we have the OPO report that focuses on the technical aspects of the electricity sector. We want to give a full picture of all fuels, and we decided that a complementary report that focused on the fuels sector would be appropriate and would help us in our consultation process. We see, going forward, there will likely be more convergence between the electricity and the fuels sectors as we move forward on our climate change initiatives.

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We asked Steen's group to get this fuel sector group together and craft a report that would give everyone the information they need to have an informed discussion. I'll let Steen walk you through the fuels sector report, what's in it and how it's going to help us.

**Mr. Steen Hume:** That's great. Thank you, Deputy.



I think an important element of the Fuels Technical Report I'd like to point out is that this is an important companion piece to the work that the Independent Electricity System Operator did in their Ontario Planning Outlook. They are essentially bookends to the conversation we're trying to have through the 2017 long-term energy plan process.

As folks are aware, recent legislative changes in the Electricity Act require the development of a technical report as it pertains to the development of the long-term energy plan with respect to electricity. IESO's OPO fulfills this work and provides a fairly detailed analysis of the province's future electricity needs.

Beyond that legislative requirement, and building on what the deputy had to say, the Ministry of Energy also thought we should do an in-depth analysis of the fuel sector in Ontario through an independent consulting firm. We released in September 2016 the Fuels Technical Report. This was prepared by Navigant Consulting. It is publicly available on the Ministry of Energy website.

In addition to retaining Navigant to undertake this work for us, we also established a fuel sector working group. This fuel sector working group was designed to provide us with additional sector perspective in the development of the report. The fuel sector working group was combined from key stakeholders in the fuel sector, such as industry associations, natural gas utilities, as well as representatives from consumer groups and also other ministries, such as the Ministry of the Environment and Climate Change.

As I've mentioned, the role of the fuel sector working group was to improve the overall accuracy and effectiveness of the Fuels Technical Report. While the fuels sector technical report is not a legislative requirement, it is a complementary piece, as I mentioned, to the IESO's work and important to our overall conversation on an integrated long-term energy plan.

Key factors, assumptions and analysis that were outlined in the OPO and the FTR, or the Fuels Technical Report, mark the starting point for the development of a long-term energy plan and will help guide the consultation process we're currently engaged in. Both reports take into account our government's commitment to a transition to greater decarbonization, as highlighted in such other government documents as the Climate Change Action Plan, the Climate Change Mitigation and Low-carbon Economy Act, and recently in the 2016 Vancouver declaration that was agreed to by first ministers.

With respect to the Fuels Technical Report, it establishes a comprehensive view of the current state of the fuel sector in Ontario, including a review of fuel consumption, and sets out outlooks for the 2016-through-2035 period, consistent with the time horizon that the OPO alludes to.

As noted, the Fuels Technical Report is complementary. The report shares a set of common assumptions with the OPO around such things as economic activity, demographic data, as well as uptake of electric equipment and transportation options. So we talk about further electrification.

The alignment of IESO's OPO with Ontario's fuel and electricity sector is important because they are closely linked. For example, both electricity and fuels can be sources of energy for space heating equipment in homes and in businesses. In the future, it's likely that a growing number of transportation options will offer electric alternatives to carbon fuel-based options. Choices made around these projects and services will influence the demand for both electricity and fuel in parallel.

As highlighted in the Fuels Technical Report, Ontario's fuel sector is multifaceted and dynamic. Fuels are—

**The Chair (Mr. Ernie Hardeman):** Thank you very much. That concludes the 20 minutes.

Before we go to the opposition side again, I want to reiterate that we're here today to deal with the auditor's report, the recommendations she made and what the deputants are doing. The questions are to relate to that. If we all wanted to hear about the future energy plans for the province, we wouldn't be at this committee. We're here to deal with the auditor's report, and I would hope that we could keep the answers to the information requested, as the committee wants to find out about the auditor's report.

We'll now go to the official opposition. Mrs. Munro.

**Mrs. Julia Munro:** Thank you very much for joining us today on what I think most of my constituents consider a very complex topic that seems to be filled with anomalies, contradictions and things like that. I want to start with one of those that I'd like you to comment on. That's what I call the conservation challenge, because many people understood the whole notion of conserving and only doing certain things like the dishwasher and the laundry at off-peak times. They were made to feel that they were making a contribution to the conservation of energy by doing this.

Then what happens is, they run into neighbours who have found themselves drowning in their electrical costs and consulted with someone for five grand or so and discovered they aren't using enough. If they only used more, they would fall into a category where they could apply for some kind of financial assistance. So, I rest my case. When I talk to my constituents, they have those kinds of mixed messages. I'd like you to comment on the complexity in that conservation in terms of, energy isn't maybe quite the way in which you would consider normal conservation—that is, saving. I want a message to take back.

**Mr. Serge Imbrogno:** I can start and then I think we can pass it on to the IESO. When I look at conservation, I think there are a couple of things you have to think about. From our perspective, there are bigger system benefits, as well, from conservation, so the more that we can incent conservation, the less that we need to—to Mr. Tabuns's point—build more generation facilities.

We benefit from residential conservation. We benefit from industrial conservation. For example, we have an initiative called the Industrial Conservation Initiative, where if large industrials turn off during the peak, there's an opportunity for them to have savings, but what it



allows us to do is to save—I think we're up to 800 to 1,000 megawatts now of peak load that we don't need to build for. We have to think about what the system benefits are, and we incorporate those when we do our long-term energy planning, so there are lower costs overall.

I think the issue then is at the consumer level: How do they benefit from conservation, and what kind of benefit do they see from conserving? A person who conserves, versus a person who doesn't conserve, will end up paying less than they would otherwise. I know that might be a difficult notion. You might not see a net reduction on your bill, but your bill will go up less than someone else's bill if you conserve.

With conservation, I think of it more as efficiency—we're using our resources more efficiently—and with efficiency there's also a benefit to your standard of living, your way of life. All of those things are incorporated in conservation.

But maybe I'll let our conservation lead at the IESO talk a bit more about the programs on the residential level and some of the benefits that are in place from the IESO perspective.

**Mr. Terry Young:** Sure. My name is Terry Young and I'm the vice-president of conservation and corporate relations at the IESO. We have been doing this for some time. If I look at the savings that have been achieved over the last 10 years, both in terms of programs and in terms of improvements to codes and standards, the amount saved over those 10 years is equivalent to half the demand that's being used in Toronto from the Toronto Hydro perspective.

So we are seeing results. We're continuing to develop programs. We're working with the 70-plus local distribution companies to introduce new programs. With the take-up, we have them for residents, we have them for business and we have them for industry.

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I think that a real example is LED lighting. We recently had a coupon event where we were providing coupons associated with LED lighting. If you were to install 10 of these LED lights in your home, over a year, you would save \$70.

There are real savings associated with that. We're implementing the government's Conservation First Framework, working with, again, the local distribution companies to make sure that people across the province—residents, businesses and industries—do have the ability to be more energy-efficient, as the deputy said, and, in turn, save money and, in turn, reduce need for supply tomorrow.

**Mrs. Julia Munro:** Thank you for the answer. I think that you can see, though, what I'm suggesting: that it's very easy for that to be a bit of a mixed message and that it isn't quite the way they think that it should be. We'll just keep on trying to do our best to make sure that they understand.

The question, I guess, that comes to mind when we're looking at the auditor's report is the issue around the OEB having no approved technical plan for 10 years.

When I think of a 10-year period when there wasn't the normal business going on, obviously it suggests to me that, once the decision was made with the pieces of legislation that you referenced at the beginning, there's a huge amount of change that has to go along with those changes that the legislation demanded.

I wonder if you could give us—and I'm again thinking of my constituents who would like easy answers. What you're working now under, as opposed to the 10-year gap—what are first issues to be dealt with when you're looking at regrouping on such an important topic as the technical plans for the health of our province?

**Mr. Serge Imbrogno:** I could start. I think that, during that period, there was still planning going on. The IESO—the OPA, at the time—would have been doing the long-term planning. The ministry would have been planning as well. I think what started with the IPSP process was an attempt to have that integrated plan. It would have gone to the OEB for approval.

I think what happened during that time was that it was a very time-consuming process. As you started to go through it—develop the plan and start to get it through approvals—there were changes in the economy. We had the recession in 2008. So there needed to be changes made to that plan. I think that, once you have a plan tracking through that is already outdated, the government of the day decided that they needed to make changes.

I think that it was just a process that wasn't responsive enough to the changing times. I think that's why the government put in place, in 2010, the long-term energy plan as a way of being responsive to changing circumstances. I think that we've adopted that in 2013 and moved it forward with more consultation, and we've embedded it in legislation.

I think that there was planning during that time. It's not like the IESO or the OPA stopped thinking about the long-term plan. I think that it was just a recognition that the process that we had in place to formalize the plan was a bit cumbersome and wasn't responsive enough to changing times.

Maybe I'll let the IESO perspective—

**Mr. Bruce Campbell:** I think that, moving forward, one of the lessons we've learned is to encourage real conversation about the choices that are ahead of us. If you look at our Ontario Planning Outlook, it covers four scenarios: one in which load might actually decline a little bit; one that has it flat; and then—particularly associated with the potential for electrification as we try to deal with carbon emissions reduction—there are two significantly higher-load outlooks.

By setting it up this way, what we're trying to do is prompt a conversation around the solutions that people might have available to them, and to do that in the course of the policy development around that. One of the great advantages is that we were having those conversations early, and thoroughly, across the province.

From our perspective, that's certainly a big advantage, to have those conversations and to put out the technical report that the ministry was responsible for and our own report. We tried to put out that report in a way that was



accessible to people. They could dig in much more deeply there on our website. All the background information is there as well. What we've tried to do is really encourage a conversation around the choices that had to be made, because the fact is that today, the choices that are available across the sector for meeting energy needs have expanded I think beyond what anyone might have predicted back at the beginning of that 10-year period we talked about.

**Mrs. Julia Munro:** As I see it, there are two kinds of energy: One of them is the constant and the other is sort of the intermittent. Am I correct in assuming the constant would be water and nuclear and the intermittent the solar and wind?

**Mr. Serge Imbrogno:** We refer to it as baseload—baseload and intermittent. Then there are peaking resources that you only really employ once you have really high-peak demand.

**Mrs. Julia Munro:** Well, I smile because I have taken the opportunity on more than one occasion to use the IESO real-time, at home shows and things like that, and people are amazed—when you were talking a moment ago about what's online—to find out. They'd be all hanging over it as if it was the last baseball game or something. But instead, they were finding out what was actually being used and how it was being used. I think people need more of that kind of understanding to be able to see how it all works.

If you had to make a decision between the generation, transmission and distribution files, which one would you put at the top of the list in today's Ontario? Which one needs money first?

**Mr. Bruce Campbell:** The choices are generation, transmission—

**Mrs. Julia Munro:** And distribution.

**Mr. Bruce Campbell:** —and distribution. That's a great question. I'm going to speak first as the system operator, where at the bulk system, the generation and the transmission is kind of at the heart of what we operate to provide reliability across the province. But I think, at the distribution level, I spoke a little bit of it in my opening remarks, where we are seeing that there are a lot more choices available. Again, my favourite example is the PowerHouse project in the PowerStream local distribution company. It applies solar; it applies storage. It uses technology to, in effect, trade back and forth amongst the 20 houses. I think, yes, there's always going to be a place for the provincial level of planning and that's going to be important, but over time, we're also seeing a lot more happening in the local distribution companies.

If you look in some of the jurisdictions to the south of us, they're looking a lot at what kind of platforms they need in the local distribution companies to manage that kind of thing. So I think it's a pretty interesting time. We're working hard to take a look at that relationship between the bulk system that we operate and the local distribution companies, because particularly, as more resources go into the distribution companies, we want to be able to coordinate between ourselves. I think the days of one-way delivery into a local distribution company are

slowly fading a bit, and we're going to have to pay more attention to what's happening on each other's systems.

We're working on all of this. All I can say is, I'm glad to hear people are hanging over the computer screen and looking at our website, because we do constantly try to improve that and update it to try to get that information out and get people, particularly in our regional planning, talking about the choices that are available to them. I think it's very important.

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**Mr. Serge Imbrogno:** I'd add, just on the regional planning, that we've divided the province into 18 regions and—

**Mr. Bruce Campbell:** Twenty-one.

**Mr. Serge Imbrogno:** Twenty-one; sorry. I must have forgotten three. The IESO is developing plans. Some of them are complete, some of them are in process, some of them are planned, but as you look at those regional plans, there are different solutions for each region. Each region has its own unique needs, and there are different solutions for each of those. So I think we're moving from the—maybe the 2010-13 LTEP, from my perspective, was more at the bulk level, getting the generation mix right, and now I think we're moving down into, "Let's get the focus on the regional planning. Let's link in with municipalities and let's coordinate that planning and let's have tailored solutions to each of those regions." So I think our focus is probably shifting down to a regional perspective.

**Mr. Bruce Campbell:** If I could just add a little bit to that, also what it does is it integrates the energy planning into the local land use planning. I think, for people who have observed the whole planning pantheon, at the municipal planning level it was always sort of just assumed that electricity would be there to plug in, whatever happened. I think now what we're putting a lot of effort into with the regional planning is talking to the regional planners, getting out there and trying to have energy taken into account as land use plans are being developed regionally. I think in the long term that will add to the kinds of efficiencies that Mr. Young was talking about and will engage communities more.

**Mrs. Julia Munro:** So it might be the end of the Green Energy Act.

Something else that I just wanted to ask is, with this kind of change in focus of the distribution and the importance, is there any interest growing or declining in terms of people being off the grid? When there was conversation about windmills years ago, that was kind of the picture that people had: one of those romantic windmills sitting up high on the hill, that they owned, and they were going off the grid. Do people go off the grid today more or less?

**Mr. Serge Imbrogno:** I can start. From my perspective, it's almost building on what Bruce had talked about with PowerStream and their PowerHouse project. Really, what makes it work is that you needed to be connected to the grid, because there are huge benefits to being connected: reliability and being able to generate power and feed it into the grid or store power or use the



grid. My sense is that this sense of a death spiral is really not, I don't think, a reality, given the benefits you get from being connected to the grid, and both receiving and feeding into the electricity in the future. I think there are great opportunities at the distribution level about being connected to the grid.

**Mrs. Julia Munro:** I have another question that sort of follows from that: Does that mean that we're going to see more cogeneration in the planning that you see as a going-forward position?

**Mr. Bruce Campbell:** I think we that see being implemented now. If you can have that happy combination of using heat efficiently and producing electricity efficiently, I think that is clearly something that is worth investing in when both of those things are needed.

**The Chair (Mr. Ernie Hardeman):** A minute and a half.

**Mr. Serge Imbrogno:** Can I just add one more thing; sorry? On connecting to the grid, I think the minister has talked about how not all areas of the province are connected equally. We've talked about remote First Nations right now. Twenty-five are not connected; they're running on diesel. We have a plan to connect 21, economically, to the Ontario electricity grid. We've been in discussions with the federal government for the last number of years to find a cost-sharing arrangement, because we're burning thousands of litres of diesel each year and we think that connecting more people to the grid, especially these remote First Nations communities, is a priority for this government as well.

**Mrs. Julia Munro:** Thank you.

**The Chair (Mr. Ernie Hardeman):** That concludes the questions there. We'll now go for the second round. There will be about 16 minutes per caucus.

**Mr. Peter Tabuns:** How many minutes?

**The Chair (Mr. Ernie Hardeman):** Sixteen.

**Mr. Peter Tabuns:** Sixteen.

**The Chair (Mr. Ernie Hardeman):** So with that, we'll go to Mr. Tabuns.

**Mr. Peter Tabuns:** Okay. Thank you very much, Chair. Where I'd left off, I was asking you if the evaluation of the life extension of Pickering took into account its impact on surplus baseload generation. As you know, we have substantial surplus that we're selling at a loss. Having Pickering continuing continues that SPG. Was that taken into account when you did your assessment?

**Mr. Michael Lyle:** Yes, that was part of our analysis. I think it's important to note, and you'll see this in the background material to the planning outlook, that as we go into the 2020s, SPG declines significantly. That's with nuclear refurbishment and ultimately, as well, of course, with the Pickering retirement.

**Mr. Peter Tabuns:** Okay. The other question—and I'm going to jump around a bit here. The Auditor General has noticed that the contracts that have been signed with private generators don't go to the OEB for review. What are we at—about 35% of generation contracts are reviewed by the OEB? Sorry, 35% of generation capacity is reviewed by the OEB; the rest is not. Why don't you

take it to the OEB for a hearing and the opportunity for people to question those who are making the decisions and to go through the details and the facts around those rates?

**Mr. Serge Imbrogno:** I'll say a few things on the OEB. I know there's a commodity part of it where they review OPG hydro, nuclear. The OEB also does transmission and also does distribution, so in terms of the overall costs of electricity, the OEB is a major player in that. In terms of contracting through the IESO, it is really with the IESO to determine the appropriate contract structure and to drive, with the LRP process that we have in place, those prices to the lowest level possible. I think we have IESO oversight of that part of the contracting. The rest of the sector has OEB oversight.

**Mr. Peter Tabuns:** So, increasingly, the OEB is regulating a smaller and smaller part of generation capacity in Ontario. That's correct, is it not?

**Mr. Serge Imbrogno:** It depends how the generation capacity unfolds. We've suspended the LRP II process.

**Mr. Peter Tabuns:** I'm not just talking about LRP. You've signed contracts with NUGs. You're renewing a contract with Bruce for refurbishment. None of that is going forward to the OEB, correct?

**Mr. Serge Imbrogno:** No, the NUGs would be part of the IESO-controlled market. I know that the IESO is looking at different market structures to incent generation rather than having more 20-year contracts. I think the IESO is looking at different ways of contracting as capacity comes off. All those are part of the system planning going forward.

**Mr. Peter Tabuns:** When the OEB has a hearing on a rate increase, the public has an opportunity to be there and to challenge the material that's put forward and to challenge witnesses. When the IESO signs a contract—and with no disrespect to the IESO; you seem to be fairly tough business people, and I appreciate that—the public doesn't have an opportunity, in open tribunal, to look at the evidence and question the decision-makers. Why did you make that decision? Why did you separate the IESO contracts off from the other generators?

**Mr. Serge Imbrogno:** Well, I think part of our long-term energy plan is allowing everyone to have that voice up front in terms of where the LTEP is going, where our power system is going. Part of that is, you have a nuclear part of it and you have the other part that's maintained by the IESO. I think if you look at other jurisdictions, you have equivalent IESOs that have capacity markets. I think each jurisdiction has a way of contracting for supply.

**Mr. Peter Tabuns:** The difficulty, Deputy, is that with the LTEP, the long-term energy plan, we don't actually get to question the decision-makers in a tribunal where they have to present evidence. We don't get to cross-examine them. You have a discussion and you have consultations where people get to give their opinions, but that's very different from an OEB rate hearing, you'd have to admit. Let's say you decide that the long-term energy plan is the way you want to decide on the rates for the generators that have a contract with the IESO. Why



don't you allow a tribunal within which the public and interested parties can come and question decision-makers and challenge the evidence? Why?

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**Mr. Serge Imbrogno:** I'm probably going to repeat, but I think the LTEP process allows people to provide their input. The actual mechanism of whether you're doing an LRP process, where it's competitive and open—that is one of the outcomes we've moved to. So I think it's a different way of getting to the same outcome: the lowest cost of power. You can get that by going through an OEB process or you can get that through IESO oversight and having a more market-based or competitive process.

**Mr. Peter Tabuns:** Well, I'll say and go on to other things, but there's a vast difference between a regulatory hearing, in which you get to challenge decision-makers and evidence, and the LTEP process that you have in place, where in fact the public's ability to question decision-makers is extraordinarily limited. They get to give their opinion, no doubt about it; but there's a big difference between giving your opinion and getting to question the decision-makers.

In the long-term energy plan from 2013, you had planned to shut down Pickering in 2020. Why?

**Mr. Serge Imbrogno:** The dates at which you shut down a nuclear plant are determined by economic factors and also regulatory factors. Part of that is that OPG and Bruce Power have been doing extensive research and development into how long nuclear plants can run without being refurbished. I think what allowed us to extend the life of Pickering was all the research and development that's been done into demonstrating to the CNSC that there's continued life in the pressure tubes. Once that was established, that business case allowed us to go forward and say, "Yes, we can extend the life." So I think it was a combination of factors. It was the science that was done and then the economics of it. Those two things came together.

I think we've said that we've allowed OPG to go forward to complete their regulatory review with OEB on the economic side, but also with the CNSC. Those two things have to come together, we think in 2017 or 2018, for the government to make a final decision. So we've allowed OPG to go forward with the understanding that these things will be delivered. They're quite confident they can demonstrate to the CNSC that there's continued life in the pressure tubes.

Those things came together, and that's why we feel comfortable moving forward with the Pickering life extension.

**Mr. Peter Tabuns:** Was there any public consultation on that life extension?

**Mr. Serge Imbrogno:** It's before the OEB now, so that would be the process where all stakeholders can input into that perspective. The IESO has provided that system benefit analysis to help that process.

**Mr. Peter Tabuns:** Why did you abandon the IPSP planning process?

**Mr. Serge Imbrogno:** I tried to explain that. I think there was a change in the economy at the time. There was a view that the planning needed to change to adapt, and as it was going through the process—I think it was a long process—it didn't get to a conclusion, and there was a desire to make changes before that plan would have been approved. So my sense—I wasn't there at the time—is there was a view that we needed to make changes to the plan before it went through a long approval process.

**Mr. Peter Tabuns:** So you felt that having a long process, which was a public process, where the IESO or the OPA had to present their evidence, was not appropriate?

**Mr. Serge Imbrogno:** Well, I wouldn't say it wasn't appropriate, but given what changes were happening both in the sector and in the economy, you wanted to be responsive to that. It's hard to make changes to a plan that's already in the process of being reviewed, and if you have to make changes to that—I think there was a recognition that that process wasn't working or accomplishing what the sector needed at the time.

**Mr. Peter Tabuns:** I think it was the 2011 plan that was just simply abandoned, correct? I can check with the Auditor General, but I think it was about \$16 million spent on doing the analysis, and it was just simply—

**Mr. Serge Imbrogno:** I think there was a draft prepared, but it wasn't finalized or finally approved.

**Mr. Peter Tabuns:** Was \$16 million spent on doing that?

**Mr. Serge Imbrogno:** I think that's what the auditor found, so I wouldn't suggest otherwise.

**Mr. Peter Tabuns:** I'm assuming that it's a fair amount of work to assess the system and look at where it needs to go. That's a lot to just throw away.

**Mr. Michael Lyle:** Quite a bit of that analysis did feed into the 2010 LTEP, though. So you're correct that there was a draft second IPSP prepared, following up from the first IPSP, which did not proceed after the government made a decision to move forward with certain policy changes and as the economy was changing.

But as I say, a lot of that analysis that was done by the OPA at the time then fed into the LTEP 2010.

**Mr. Peter Tabuns:** It's interesting. I appreciate your intervention. If it had proceeded as had originally been planned, there would have been public hearings and an ability to challenge the modelling, to question the data. What we actually got, then, was that material fed into the long-term energy plan, where there wasn't an ability to question the data or the decision-makers.

What you wanted was something that was fast-moving but really had substantially reduced public input or ability to challenge. Why would you dispense with—why would you ignore—public consultation and input?

**Mr. Serge Imbrogno:** I think the 2010 LTEP also had a consultation process. I don't think it was as robust as the 2013 LTEP—

**Mr. Peter Tabuns:** No, it was pretty un-robust. I have to agree with you there.

**Mr. Serge Imbrogno:** I didn't say it was un-robust. I said it wasn't as robust as 2013.



**Mr. Peter Tabuns:** “Un-robust” works for me. But in terms of the ability in those consultation hearings, did people get a chance to question the decision-makers and challenge the evidence?

**Mr. Serge Imbrogno:** I was there for the 2013 LTEP. I don’t want to speak for the people who were around at the 2010 LTEP.

**Mr. Peter Tabuns:** So you were around for the 2013. Was it set up like a tribunal? Was evidence challenged? Were there witnesses called? Was there cross-examination?

**Mr. Serge Imbrogno:** On the 2013 LTEP, we had engagement sessions in communities across the province. The morning sessions were focused on the Conservation First Framework. They would have been gathering all the local distribution companies to talk about conservation, and they would have their input into that.

The afternoon sessions were all the stakeholder groups. Each stakeholder group obviously would have their own perspective on what should go into the next long-term energy plan. Those ideas were shared. We had the Environmental Registry. For people who attended or didn’t attend, that was the main vehicle for getting your input into the long-term energy plan.

The evening sessions were public open houses, where we invited the public in and we tried to explain different aspects of the long-term energy plan and get their input as well.

That was the process that we used. I think, in ways, it opens up energy planning to more people than if you have a more contained process within the traditional OEB style. I think it actually allowed us to get more feedback from more Ontarians through that process.

**Mr. Peter Tabuns:** I would say that the process really made it very difficult for anyone to dig into the numbers and to get at the decision-makers. I understand what you’re saying. These are two very different models of how you make public policy, two radically different models.

I’m going to go on to another question. I think you’ve given me the information that I need on that.

I did take a look at this document on rate smoothing. In fact, there is an outcome. In 2027, there will be rate decreases from the 16 cents at 3.4% per year. From 16 cents over three years, you’ll get down to about 14.5 cents. You’re moving us to a much higher level of cost. Do you think there will be a market for this power at that point, given that the cost of wind is coming in at 6.5 cents per kilowatt hour in Quebec, and I think we’ve even seen 6.5-cent bids here in Ontario, and the cost of solar is continuing to drop? Are you worried about the potential for stranded assets, with reactors charging 16 cents a kilowatt hour for power?

**Mr. Serge Imbrogno:** Mr. Tabuns, I’d suggest that each type of resource has its need within the system. We have nuclear, which is the baseload. We have Pickering coming offline, no later than 2024. So we already have a drop of those megawatts from nuclear. We’re down to the 43% range of baseload nuclear power.

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If you look at the OPO scenarios, we have a number of electrification scenarios. Depending on where we are on that track going forward, we have a clean system. One of the ways we can fight climate change is electrification. I think we’re pretty confident that we’re going to need that baseload power. If you have people charging overnight, you do need that round-the-clock baseload power to supply the system. I think, under all those scenarios, we feel confident that that baseload supply of nuclear is going to be needed.

**Mr. Peter Tabuns:** And you know—

**The Chair (Mr. Ernie Hardeman):** That concludes the time.

**Mr. Peter Tabuns:** Oh, come on, Chair.

**The Chair (Mr. Ernie Hardeman):** Thank you very much. We’ll now go to the government: Mr. Delaney?

**Mr. Bob Delaney:** Thank you very much, Chair.

I was just reviewing the auditor’s report, particularly the part pertaining to some of the prices paid for different forms of energy. One of the measures that the province has been able to use with regard to price mitigation is to deal with some of our neighbouring jurisdictions and try to match periods—and I’m going to use two in particular—when Ontario has surplus energy and Quebec has a shortage of energy, and when Quebec has surplus electricity and Ontario has a strong need for electricity.

In this vein, I can recall a very, very helpful trip out to IESO to see the big board and to personally see where all of the intertie points were and to look at the map. You get a better sense, I think, of some of the things that are feasible and some that aren’t. As I looked at them, some of the things that I had heard discussed in the House and in the community—I could see at a glance that some of them were not feasible.

In this vein, I’d just like to explore some of the things that Ontario is doing to pursue importing and exporting electricity to and from neighbouring jurisdictions. One that some of my colleagues often mention that you may wish to give some special treatment to is the province of Quebec. Perhaps you could provide us some insight.

**Mr. Serge Imbrogno:** Absolutely. I know the IESO has a lot of expertise in the area as well. I think an important part of our electricity system is our intertie capacity with our neighbouring jurisdictions. One of our largest interties is with the province of Quebec. Electricity imports are an important aspect of our supply mix. They help maintain the reliability, cost-effectiveness and competitiveness of the system.

We have, historically, been a trader with Quebec, and that’s more on the hourly energy market, as we require energy and as they require energy. But on October 21, 2016, we signed an historic agreement with Quebec for trading electricity capacity and energy storage to help make electricity more affordable and reliable, while continuing to reduce greenhouse gases in the province. It is expected, once we finalize the deal, that system costs will be reduced by about \$70 million over the course of the agreement. Because we’re using electricity from



Quebec to offset when we would normally burn gas, we believe we will have about a million-megatonne reduction each year from that initiative.

This agreement builds on a previous agreement that we had in 2015 for seasonal capacity exchange. Our focus remains on mitigating costs for Ontario ratepayers. Our government is committed to pursuing opportunities with Quebec and neighbouring jurisdictions to increase our flexibility and reliability.

I'm going to ask Steen to go through it in more detail. We think this is, as we said, a historic agreement because it has those three elements working together.

**Mr. Steen Hume:** Thank you, Deputy. By way of background, Ontario is connected to a large, stable network of electricity systems across North America, which support system reliability and economic efficiency. Ontario's electricity system has approximately 26 interties with five neighbouring jurisdictions. Ontario exports electricity to our neighbours next to us, in Manitoba and Quebec, but also south of the border, when we have available power. And we are able to rely on imports of power with our neighbours when it's cost-effective.

It should also be noted that export of electricity generates revenue for the province. For example, the Independent Electricity System Operator estimated that the benefit to Ontario from electricity trading in 2015 was approximately \$228 million. Electricity exports reflect the prevailing market price and are scheduled when it is economic for both Ontario and the associated importing jurisdiction. Electricity imports from Ontario compete with resources in other jurisdictions and are scheduled on an hourly basis, when they are more economic than domestic alternatives.

Since 2006, Ontario has been a net electricity exporter. In 2015, Ontario imported 5.8 terawatts of electricity and exported 22.6 terawatts.

With respect to our close relationship with Quebec and with respect to the import and export of electricity, as the deputy mentioned, Ontario and Quebec have historically engaged in extensive mutually beneficial electricity trades since 2002. Trade has occurred through the sale of energy in the wholesale market in Ontario.

With respect to 2015, Ontario imported and wheeled approximately 4.8 terawatts of electricity from Quebec, which is the equivalent of enough power to power a city like Kitchener-Waterloo for a year. And then, Quebec has also imported about 2.9 terawatts into Ontario.

In September 2014, Ontario and Quebec established an energy working group, which explored, among other key initiatives, opportunities to enhance electricity trade between the two provinces. Since that group's inception, the two provinces have engaged in detailed and ongoing negotiations regarding trading opportunities. That working group includes active participation, obviously, from the Independent Electricity System Operator and a counterpart in Quebec, through Quebec hydro. The working group has made significant progress, most notably seen in May 2015, when we finalized a seasonal electricity capacity-sharing agreement, as mentioned.

Most recently and quite importantly, on September 11, 2015, there was a joint cabinet meeting in Quebec City, where the provinces signed an MOU that was laying the groundwork for the most recent announcement around electricity trade between the two jurisdictions. In that MOU, both jurisdictions indicated their mutual interest in exploring potential trade agreement opportunities.

As I alluded to, on October 21, 2016, Ontario and Quebec signed a historic agreement for electricity trade capacity and energy storage to help make electricity more affordable but also reliable, and also reduce greenhouse gases. This work was largely done through the act of negotiations of IESO and Hydro-Québec.

Just by way of a bit of background about why we've engaged in these close relations with Quebec, it's useful to have a healthy appreciation of Quebec's electricity system. Quebec benefits from an abundance of low-cost hydroelectric power, which has kept electricity prices low and stable for 20 years and has provided them with export opportunities.

In 2015, Hydro-Québec generating capacity was over 36,000 megawatts and the total annual generation was approximately 176 terawatts. By comparison, Ontario has installed capacity of over 35,000 megawatts and generated approximately 153.7 terawatts in 2015.

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As we've mentioned, Hydro-Québec exports significant amounts of electricity to neighbouring jurisdictions in Canada, including Ontario, but also to the United States under long-term contracts and through short-term wholesale markets. For example, in 2015, Hydro-Québec net electricity export totalled 29.9 terawatts and generated approximately \$1.6 billion. Approximately 12% was imported into Ontario.

Hydro-Québec is well positioned to continue exporting to neighbouring jurisdictions for the following reasons:

- Quebec's electricity generation costs are not affected by fossil fuel prices;

- Hydro-Québec has flexibility in matching supply and demand, i.e., it can sell electricity at high prices during the day and replenish its hydroelectric reserves at night when wholesale prices are lower; and then

- Quebec experiences its highest electricity demand days during the winter due to electricity heating, unlike most neighbouring jurisdictions that experience that peak in the summertime due to air conditioning load and things like that.

To return to the work that the 2015 MOU between Ontario and Quebec laid the groundwork for—the most recent agreement in October 2016—in the MOU, Ontario and Quebec specifically mandated their energy ministers and their energy agencies to engage in discussions and to make necessary efforts to conclude a medium-term electricity trade agreement. This was an important point.

The MOU indicated that such an agreement would have to mitigate anticipated increased electricity sector greenhouse gases, and, in addition, that it would result in a net increase in electricity imports from Quebec and a



net decrease in domestic reliance on natural gas generation compared to what would have naturally transacted in the wholesale marketplace. So the idea was to import electricity from Quebec at a time when normally we would use natural-gas-fired generation so that we could reduce our GHG footprint.

The agreement would also provide value to Ontario ratepayers and ensure that the overall cost of the operation of the electricity system was lower than what the market would have otherwise provided.

Finally, the agreement was expected to complement existing electricity policy initiatives, such as Ontario's cap-and-trade program, ongoing conservation-demand management and IESO's proposed capacity auction.

In October 2016, an agreement in principle was reached between the two jurisdictions. It's expected that, when finalized, the agreement will reduce electricity system costs by about \$70 million over the course of the agreement. It will also, importantly, reduce greenhouse gas emissions by approximately one million tonnes per year.

The agreement term will be from January 1, 2017, to December 31, 2023. Under the agreement, Ontario will import up to two terawatts annually of clean hydro from Quebec at targeted times, as mentioned, when natural gas would have otherwise been used.

For the capacity component, Ontario will continue to provide 500 megawatts of capacity from December to March to help Quebec address its winter shortfall, similar to what was agreed to in the seasonal capacity sharing agreement.

The third part of the agreement, and an important innovation part, is the cycling and storage portion, which will allow Ontario to send energy to Quebec during off-peak periods and withdraw a portion of that energy back at on-peak periods to again offset GHG-emitting resources. The remaining portion of this energy will be retained in Quebec.

The agreement between Ontario and Quebec, and IESO and Hydro-Québec, will ensure Quebec's abundant and renewable electricity supply is made available to Ontario. Working together, we're looking out for the best interests of Ontario, using the existing electricity system without creating an additional cost to either province and delivering savings to consumers over the long period.

It's anticipated, in closing, that this agreement between Ontario and Quebec, executed through IESO and Hydro-Québec, will be finalized by the end of the year.

**The Chair (Mr. Ernie Hardeman):** Thank you very much. That concludes the time. I just wanted to say that, in my comments in the previous round—I can assure you that I listened very intently, and the Quebec agreement does not fall within the time frame of the auditor's report, so, in fact, it was not a relevant question or a relevant answer. So thank you very much, but I do caution the members of the committee that we are here for a purpose.

If we can't get the information out while we're here, then we're going to have to ask them to come back and give it to us at another time.

I think it would be much more efficient if we could stay with the questions focused on the auditor's report, and that will hopefully help us in dealing with the recommendations in that report and how we can, in our report, support or enhance the report, as it is, to help the deputants further the cause.

**Mr. Serge Imbrogno:** Chair, can I just raise one point? In the auditor's report, she does talk about electricity imports, and so I think we are addressing what the auditor said in the report. I don't want to challenge the Chair about it, but I'm just throwing that out there.

**The Chair (Mr. Ernie Hardeman):** That may or may not—the truth of the matter is that the auditor's report was written in 2015, so it did not include the Quebec agreement that we spoke for. So I just point out to the people: We're here to disseminate the information, to get the information from the deputants, so we can address the auditor's report. I'm sure there will be other opportunities where we can hear all the good work that the agencies are doing.

We now go to the—

**Mr. Arthur Potts:** Chair, point of order.

**The Chair (Mr. Ernie Hardeman):** Point of order?

**Mr. Arthur Potts:** Yes, I think you're being a little harsh there. I don't mean to be challenging the Chair, but the reality is that the report—

**The Chair (Mr. Ernie Hardeman):** I've ruled, and it sounds to me like it's a challenge.

**Mrs. Julia Munro:** I'm going to pass to Mr. Tabuns, since my colleague is not here at this point.

**The Chair (Mr. Ernie Hardeman):** Mr. Tabuns?

**Mr. Peter Tabuns:** Well, as much I would love to, Mr. Chair—

*Interjections.*

**Mr. Bob Delaney:** Just to the comments that the Chair made, I would like to point out that the government did do its best to address exactly that. In fact, just in the event that the Chair would ask—

**The Chair (Mr. Ernie Hardeman):** Again, I think there's no room for argument with the Chair's ruling. That's all.

We will go back to Ms. Munro. You cannot pass your time. It is equally allotted to all three parties. If one does not use it, it circulates.

**Mrs. Julia Munro:** Okay, then I'll pass.

**The Chair (Mr. Ernie Hardeman):** If there are no further questions, we thank you very much for your presentation this afternoon, and we look forward to continuing our debate. Hopefully we will come to a conclusion on this report. Thank you.

*The committee recessed at 1428 and continued in closed session at 1431.*



1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud. The text outlines the various methods used to collect and analyze data, including the use of computerized databases and statistical software. It also discusses the challenges of data collection and analysis, such as the need for standardized data formats and the potential for data manipulation.

2. The second part of the document focuses on the role of the auditor in the financial system. It describes the various types of audits, including internal audits, external audits, and government audits. It also discusses the importance of the auditor's independence and the need for the auditor to maintain a high level of professional skepticism. The text outlines the various steps involved in the audit process, from the initial planning and risk assessment to the final reporting and communication of findings.

3. The third part of the document discusses the importance of the financial system in the economy. It describes the various components of the financial system, including the banking system, the capital markets, and the insurance industry. It also discusses the role of the financial system in the economy, including its role in providing capital to businesses and individuals, and its role in facilitating the flow of funds between savers and borrowers. The text outlines the various challenges facing the financial system, such as the need for greater transparency and the potential for systemic risk.

4. The fourth part of the document discusses the importance of the financial system in the context of the global economy. It describes the various components of the global financial system, including the international banking system, the international capital markets, and the international insurance industry. It also discusses the role of the global financial system in the world economy, including its role in providing capital to businesses and individuals, and its role in facilitating the flow of funds between savers and borrowers. The text outlines the various challenges facing the global financial system, such as the need for greater transparency and the potential for systemic risk.

5. The fifth part of the document discusses the importance of the financial system in the context of the future. It describes the various components of the future financial system, including the emerging technologies, the emerging markets, and the emerging risks. It also discusses the role of the future financial system in the world economy, including its role in providing capital to businesses and individuals, and its role in facilitating the flow of funds between savers and borrowers. The text outlines the various challenges facing the future financial system, such as the need for greater transparency and the potential for systemic risk.







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